

Claims:

1. A method of acquiring a packet signal for a wireless communication device configured in a zero intermediate frequency (ZIF) architecture and including dual DC and gain feedback control loops, comprising:

5 periodically sampling a receive signal;

if DC level of the receive signal is above a predetermined DC threshold level, holding a gain setting of the gain loop constant until the DC level of receive signal is below the predetermined DC threshold level;

if the DC level of the receive signal is below the predetermined DC threshold level,

10 operating the gain loop to control power level of the receive signal to a predetermined target power level; and

operating the DC loop to reduce DC level of the receive signal.

2. The method of claim 1, further comprising:

converting an analog receive signal into a digital receive signal; and

15 said periodically sampling including generating digital samples.

3. The method of claim 1, wherein the gain loop has a plurality of discrete gain settings.

4. The method of claim 1, further comprising:

detecting a rail condition in which a substantial number of receive signal samples

20 are at a predetermined maximum level.

5. The method of claim 1, further comprising:

detecting clipping of the receive signal; and

operating the gain loop in a clipping mode.

6. The method of claim 5, further comprising:

5 determining an amount of clipping of the receive signal; and

adjusting gain setting based on the amount of clipping of the receive signal.

7. The method of claim 6, further comprising:

determining a clip ratio of clip versus non-clip samples.

8. The method of claim 7, further comprising:

10 employing a graduated clip gain adjustment based on the amount of clipping of the
receive signal using a corresponding one of a predetermined plurality of gain setting
adjustments for each of a predetermined plurality of clip ratios.

9. The method of claim 8, wherein said graduated clip gain adjustment is
graduated between a high gain adjustment for a high clip ratio and a low gain adjustment

15 for a low clip ratio.

10. A method of acquiring an acknowledge packet signal for a wireless communication device configured in a zero intermediate frequency (ZIF) architecture and including dual DC and gain feedback control loops, comprising:

storing a gain setting of a gain loop;

5 transmitting a packet;

restoring the stored gain setting of the gain loop after transmitting the packet;

holding the gain setting of the gain loop constant during a predetermined quiet period;

operating the DC loop during the quiet period; and

10 after the quiet period, operating the gain loop in an attempt to control power level of the receive signal.

11. The method of claim 10, further comprising:

determining whether the DC loop converges to a DC gain setting within a predetermined period of time.

15 12. The method of claim 10, further comprising:

determining whether an acknowledge packet is being transmitted via the wireless medium; and

attempting to acquire the acknowledge packet.

13. The method of claim 10, further comprising:

20 storing a DC gain setting of the DC loop prior to transmitting the packet; and

restoring the stored DC gain setting after transmitting the packet.

14. A method of determining clear channel assessment for a wireless communication device configured in a zero intermediate frequency (ZIF) architecture and including dual DC and gain feedback control loops, comprising:

storing a gain setting of a gain loop;

5 detecting a transmitted packet;

restoring the stored gain setting of the gain loop after the packet is transmitted;

holding the gain setting of the gain loop constant;

operating the DC loop in attempt to determine DC level of a receive signal; and

determining whether the DC loop converges.

10 15. The method of claim 14, further comprising:

storing a DC gain setting of the DC loop prior to packet transmission; and

restoring the stored DC gain setting after packet transmission.

16. The method of claim 14, further comprising:

holding the gain setting of the gain loop constant during a predetermined quiet

15 period; and

operating the gain loop after the predetermined quiet period.

17. The method of claim 14, wherein said operating the DC loop comprises conducting a binary search.

18. The method of claim 14, wherein said operating the DC loop comprises
20 conducting a successive approximation.